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| 10/536,890 | 10/03/2005 | Philippe Robert | 124102 | 4335 |

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OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

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| EXAMINER |
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CULBERT, ROBERTS P

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| ART UNIT | PAPER NUMBER |
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1792

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10/24/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/536,890 | Applicant(s) ROBERT ET AL. | |
| | Examiner Roberts Culbert | Art Unit 1763 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/11/07.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-13 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13 is/are allowed.
- 6) ☒ Claim(s) 8-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Response to Arguments***

Applicant's arguments filed 9/11/07 have been fully considered but they are not persuasive.

Applicant has argued that Reid does not teach sidewalls confining the suspended structure because the sacrificial layer extends to the lateral ends of the substrate.

The argument is not persuasive because the sidewalls of the sacrificial layer confine the suspended structure as broadly claimed. The relationship is shown in Figures 2B-2E.

Applicant has argued "*Reid fails to disclose "a deposition step, on at least a part of the substrate and of the front face of the sacrificial layer, of an embedding layer presenting a larger thickness than the thickness of the sacrificial layer," as called for claim 8. In Reid, as shown in Fig. 2B, the plug layer 43 does not correspond to the embedding layer of claim 8. The plug layer 43 does not present a larger thickness than the sacrificial layer 42. Further, as shown in Fig. 2C, after a planarization step, the plug layer 43 is removed. Therefore, the plug layer 43 is not an intermediary layer, as called for by claim 8.*"

The argument is not persuasive because the embedding layer as shown in Figure 2B, clearly meets the limitations of the broadly recited claim. The layer clearly provides a thickness greater than the thickness of the sacrificial layer, and planarizing removes a portion of the layer so that the sacrificial layer and embedding layer form a common flat surface. Applicant's arguments amount to a general allegation that the reference does not teach certain aspects of the invention which are clearly illustrated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S Patent Application Publication 2002/0047172 to Reid in view of WO 00/33089 A2 to Matheiu et al.

Regarding Claim 8, Reid teaches a production process of an integrated micro-system type component, (Figures 2A-2G and Paragraphs 19-24) comprising a fiat suspended micro-structure, using a sacrificial layer (42) of polymer material (photoresist may be used, see Paragraph 19) deposited on a substrate and having side walls confining the flat suspended structure, process successively comprising a planarization step, a deposition step of a formation layer of the suspended structure, an etching step of at least one opening of the formation layer up to the level of the front face of the sacrificial layer and a dry etching step of the sacrificial layer, the process comprising, between deposition of the sacrificial layer and the planarization step, a deposition step, on at least a part of the substrate and of the front face of the sacrificial layer, of an embedding layer presenting a larger thickness than the thickness of the sacrificial layer, so that, after the planarization step, the front faces of the sacrificial layer and of the embedding layer form a common fiat surface, the formation layer of the suspended structure being deposited on the front face of the common flat surface.

Reid does not expressly teach that a polymer sacrificial layer is dry etched, however, Reid teaches dry etching techniques for the sacrificial layer (Paragraph 23) and photoresist type sacrificial layers (Paragraph 19), and dry etching such as oxygen plasma, is old and well known in the microfabrication art for removing photoresist sacrificial layers as shown by Matheiu et al. (Page 23, Lines 20-30) Thus, it would have been obvious to use dry etching on a polymer material such as photoresist.

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Regarding Claim 9, Reid teaches the planarization step comprises chemical mechanical polishing. (Paragraph 23)

Regarding Claim 10, Reid teaches the planarization step successively comprises a chemical mechanical polishing sub-step of the embedding layer and an etching sub-step of the embedding layer so that the front faces of the sacrificial layer and of the embedding layer form a common flat surface.

Regarding Claims 11 and 12, Reid teaches the side walls of the sacrificial layer are confined by etching by means of a mask formed on the front face of a layer made from polymer material by deposition, lithography and etching of a temporary layer, deposition of the embedding layer being performed on the assembly formed by the sacrificial layer and the mask, but does not expressly teach that the mask is eliminated in the course of the planarization step or that the planarization step comprises an etching step of the mask. However, since Reid teaches patterning the sacrificial layer (Paragraph 23) and teaches that the photoresist mask for patterning is removed in the well known manner, (Paragraph 19) it would have been obvious to one of ordinary skill in the art at the time of invention to eliminate the mask during the planarization step (which comprises an etching step) since this step removes material down to the sacrificial layer thus eliminating a separate removal step for the photoresist mask.

Allowable Subject Matter

Claim 13 is allowed.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



R. Culbert
Examiner
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